UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,788	06/24/2003	Daniel J. Moreno	DP-309268	1745

22851 7590 06/08/2005

DELPHI TECHNOLOGIES, INC.
M/C 480-410-202
PO BOX 5052
TROY, MI 48007

EXAMINER	
HUNNINGS, TRAVIS R	
ART UNIT	**PAPER NUMBER**
2632	

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,788	MORENO, DANIEL J.	
	Examiner	Art Unit	
	Travis R Hunnings	2632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-17 and 20-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-17 and 20-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 10-12, 14 and 15 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Nassar for the record.

Regarding claim 10, Nassar discloses the following claimed limitations:

The claimed bit map for a transmission position encoder having a plurality of sensors for a vehicle having a transmission is met by the bit map shown in figure 4 that corresponds to the values sensed by the sensing system of a vehicle with an automatic transmission (col2 15-38);

The claimed transmission controller is met by the controller (col2 15-38);

The claimed transmission shifter adapted to shift the transmission from any one of the following states of the transmission: park, reverse, neutral, drive, and any one of a plurality of gear positions comprising drive is met by the manually operated shift lever moving the transmission between operating modes comprising: park, reverse, neutral, over-drive, drive, and low (col2 15-38 and col5 19-23);

The claimed transmission shifter also being adapted to reposition the transmission position encoder is met by the manually operated shift lever moving the sensor system (col2 15-38);

The claimed bit map comprising a plurality of states corresponding to the position of the plurality of sensors of the transmission position encoder is met by the bit map shown in figure 4;

The claimed bit map wherein at least two of said plurality of states are changed in any other shifting sequence of the transmission besides the shift from park to reverse is met by the sensing system which generates combinations of binary codes which require two or more bit changes between any selected operating modes (col2 1-4);

The claimed bit map wherein said plurality of states are provided as signals to the transmission controller is met by the binary codes being provided to the controller (col2 15-38 and col6 42-61);

See figure 4.

However, Nassar does not specifically disclose the claimed bit map wherein each of the plurality of states changes as the transmission is shifted from park to reverse. Nassar teaches a sensing system which generates combinations of binary codes which require two or more bit changes between any selected operating modes (col2 1-4). The phrase "or more" encompasses the claimed limitation of having each of the plurality of states change as the transmission is shifted from park to reverse and it would have been a design choice to set up the bit map to operate in this fashion when changing from park to reverse.

Regarding claim 11, Nassar discloses all the claimed limitations. The claimed plurality of states corresponding to the park position of the transmission are mixed is met by met by the bit pattern as shown in figure 4 that clearly shows a mixed pattern of bit values when the shifter is positioned in the park position. The phrase "mixed state" is interpreted to mean that some bits of the bit pattern are in a 'high' or logic '1' state and some bits of the bit pattern are in a 'low' or logic '0' state.

Regarding claim 12, Nassar discloses all the claimed limitations. The claimed plurality of states being binary code comprising either a high output or a low output is met by the bit pattern of figure 4 and the binary code combinations being provided for each discrete operating mode (col2 15-38 and col5 19-23). It is clear to one of ordinary skill in the art that a binary code has either a high output or a low output.

Regarding claim 14, Nassar discloses all the claimed limitations. The claimed transmission position encoder being adapted to sense either linear or angular movement is met by the sensor system sensing the movement of the shift lever between operating modes of the transmission (col2 15-38).

Regarding claim 15, Nassar discloses all the claimed limitations. The claimed bit map wherein the linear or angular movement of the transmission position encoder corresponds to shifting of the transmission is met by the sensor system being moved by

the movement of the manually operated shift lever and the sensor system detects the current operating mode that the transmission is in (col2 15-38).

3. Claims 4 and 24-26 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Nassar in view of Dourra for the record.

Regarding claim 4, Nassar discloses the following claimed limitations:

The claimed transmission position encoder is met by the sensing system (col2 15-38);

The claimed transmission is met by automatic transmission (col2 15-38);

The claimed transmission controller is met by the controller (col2 15-38);

The claimed transmission shifter adapted to shift the transmission and reposition the transmission encoder is met by the shift lever and the sensing system including a plate member that is movable in response to movement of a shift lever (col2 15-38);

The claimed transmission position encoder having means for providing a plurality of signals to the transmission controller corresponding to positions of the transmission position encoder is met by the plurality of electrical contact pins engaging the conductive and non-conductive areas on the contact surface and generating binary codes which are provided to the controller (col2 15-38);

The claimed transmission position encoder wherein said means comprises a bit pattern corresponding to four detectors each having a unique bit pattern corresponding to the positions of the transmission position encoder is met by the four electrical

contacts C1-C4 (figures 3, 3A and 4) and each operating mode (i.e. park, reverse, drive, etc) having a discrete binary coded combination (col5 19-23);

The claimed transmission position encoder being manipulated into discrete positions by the transmission shifter is met by shift lever being positioned into any of the shift lever positions and each shift lever position having a unique electrical configuration associated with it (col2 15-38 and col5 19-23);

The claimed transmission controller being adapted to determine if there is a failure in said means as the transmission position encoder transitions from a single position to one other position is met by the binary codes being provided to the transmission controller which will then compare the binary codes with predetermined combinations of codes to ensure proper operation of the transmission (col6 42-61). The act of ensuring proper operation would inherently involve the determination of a failure within the system itself.

However Nassar does not specifically disclose the claimed transmission position encoder wherein a unique binary code is provided for each transition position before and after each gear position. The term "transition position" in the context of the claim is interpreted to mean the position between two gears of a transmission and therefore a transmission position that occurs before the first gear (i.e. park) and a transmission position that occurs after the last gear (i.e. gear 1) are unnecessary because there is no gear to transition to except for the gear that the encoder was just in. Dourra teaches a unique bit pattern for every transition state so that the controller will always know the specific transition zone that the shift lever is positioned within (col3 6-11). By modifying

the transition states of Nassar to each have a unique binary code the system would then always know which transmission zone the shift lever is currently in and would therefore provide more information to the controller so that it can better determine if the system is functioning properly. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Nassar according to the teachings of Dourra to assign each unique transition zone a unique binary code.

Regarding claim 24, the claim is interpreted and rejected as claim 4 stated above.

Regarding claim 25, Nassar and Dourra disclose all the claimed limitations except for the claimed transmission position encoder wherein each of said plurality of signals changes when the transmission is shifted from park to reverse. However, Nassar teaches a sensing system which generates combinations of binary codes which require two or more bit changes between any selected operating modes (col2 1-4). The binary codes are then provided as signals to the transmission controller (col6 42-61). The phrase "or more" encompasses the claimed limitation of having each of the plurality of states change as the transmission is shifted from park to reverse and it would have been a design choice to set up the bit map to operate in this fashion when changing from park to reverse.

The claimed each of said plurality of signals is powered up in a mixed state corresponding to the transmission being in park is met by the bit pattern as shown in figure 4 that clearly shows a mixed pattern of bit values when the shifter is positioned in the park position. The phrase "mixed state" is interpreted to mean that some bits of the bit pattern are in a 'high' or logic '1' state and some bits of the bit pattern are in a 'low' or logic '0' state.

Regarding claim 26, Nassar and Dourra disclose all the claimed limitations. The claimed transmission position encoder wherein the transmission controller is adapted to track the changes in plurality of signals is met by the transmission controller comparing the binary codes with predetermined combinations of codes to determine the manual valve lever assembly and ensure proper operation of the transmission (col6 42-61).

4. Claims 5-9, 13, 17 and 20-23 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Nassar in view of Santos for the record.

Regarding claim 5, Nassar discloses the following claimed limitations:

The claimed transmission position encoder is met by the sensing system (col2 15-38);

The claimed transmission is met by automatic transmission (col2 15-38);

The claimed transmission controller is met by the controller (col2 15-38);

The claimed transmission shifter adapted to shift the transmission and reposition the transmission encoder is met by the shift lever and the sensing system including a plate member that is movable in response to movement of a shift lever (col2 15-38);

The claimed transmission position encoder having means for providing a plurality of signals to the transmission controller corresponding to positions of the transmission position encoder is met by the plurality of electrical contact pins engaging the conductive and non-conductive areas on the contact surface and generating binary codes which are provided to the controller (col2 15-38);

The claimed transmission position encoder being manipulated into discrete positions by the transmission shifter is met by shift lever being positioned into any of the shift lever positions and each shift lever position having a unique electrical configuration associated with it (col2 15-38 and col5 19-23);

The claimed transmission controller being adapted to determine if there is a failure in said means as the transmission position encoder transitions from a single position to one other position is met by the binary codes being provided to the transmission controller which will then compare the binary codes with predetermined combinations of codes to ensure proper operation of the transmission (col6 42-61). The act of ensuring proper operation would inherently involve the determination of a failure within the system itself.

However, Nassar does not specifically disclose the claimed transmission position encoder wherein said means comprises a bit pattern corresponding to three detectors each having a unique bit pattern corresponding to the positions of the transmission

position encoder. Santos teaches a transmission position detection system that uses three sensors to determine the discrete positions of the transmission shifter (col2 1-17, 24-30, figures 1 and 2). Modifying the device of Nassar to only use three sensors instead of four would reduce the overall cost of the device and provide fewer parts that could potentially fail thereby making the unit cheaper to repair. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Nassar according to the teachings of Santos to use three sensors instead of four to determine the discrete positions of the shifter.

However, Nassar does not specifically disclose the claimed transmission position encoder wherein each state of said bit pattern changes when the transmission is shifted from park to reverse. However, Nassar teaches a sensing system which generates combinations of binary codes which require two or more bit changes between any selected operating modes (col2 1-4). The phrase "or more" encompasses the claimed limitation of having each of the plurality of states change as the transmission is shifted from park to reverse and it would have been a design choice to set up the bit map to operate in this fashion when changing from park to reverse.

Regarding claim 6, Nassar discloses the following claimed limitations:

The claimed transmission position encoder is met by the sensing system (col2 15-38);

The claimed transmission is met by automatic transmission (col2 15-38);

The claimed transmission controller is met by the controller (col2 15-38);

The claimed transmission shifter adapted to shift the transmission and reposition the transmission encoder is met by the shift lever and the sensing system including a plate member that is movable in response to movement of a shift lever (col2 15-38);

The claimed transmission position encoder having means for providing a plurality of signals to the transmission controller corresponding to positions of the transmission position encoder is met by the plurality of electrical contact pins engaging the conductive and non-conductive areas on the contact surface and generating binary codes which are provided to the controller (col2 15-38);

The claimed transmission position encoder being manipulated into discrete positions by the transmission shifter is met by shift lever being positioned into any of the shift lever positions and each shift lever position having a unique electrical configuration associated with it (col2 15-38 and col5 19-23);

The claimed transmission controller being adapted to determine if there is a failure in said means as the transmission position encoder transitions from a single position to one other position is met by the binary codes being provided to the transmission controller which will then compare the binary codes with predetermined combinations of codes to ensure proper operation of the transmission (col6 42-61). The act of ensuring proper operation would inherently involve the determination of a failure within the system itself.

The claimed transmission position encoder wherein each state of said bit pattern changes when the transmission is shifted from neutral to drive is met by the bit pattern

as shown in figure 4 of Nassar that shows a change in the value of each sensor as the shifter changes from neutral to drive.

However, Nassar does not specifically disclose the claimed transmission position encoder wherein said means comprises a bit pattern corresponding to three detectors each having a unique bit pattern corresponding to the positions of the transmission position encoder. Santos teaches a transmission position detection system that uses three sensors to determine the discrete positions of the transmission shifter (col2 1-17, 24-30, figures 1 and 2). Modifying the device of Nassar to only use three sensors instead of four would reduce the overall cost of the device and provide fewer parts that could potentially fail thereby making the unit cheaper to repair. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Nassar according to the teachings of Santos to use three sensors instead of four to determine the discrete positions of the shifter.

Regarding claim 7, Nassar and Santos disclose all the claimed limitations. The claimed transmission position encoder wherein said bit pattern is in a mixed state corresponding to the transmission being in park is met by the bit pattern as shown in figure 4 that clearly shows a mixed pattern of bit values when the shifter is positioned in the park position. The phrase "mixed state" is interpreted to mean that some bits of the bit pattern are in a 'high' or logic '1' state and some bits of the bit pattern are in a 'low' or logic '0' state.

Regarding claim 8, Nassar and Santos disclose all the claimed limitations. The claimed transmission position encoder wherein the bit patter of at least two of the three detectors changes with any shifting of the transmission is met by the sensing system which generates combinations of binary codes which require two or more bit changes between any selected operating modes (col2 1-4);

Regarding claim 9, Nassar and Santos disclose all the claimed limitations. The claimed transmission position encoder wherein the transmission controller is adapted to track the changes in bit pattern is met by the transmission controller comparing the binary codes with predetermined combinations of codes to determine the manual valve lever assembly and ensure proper operation of the transmission (col6 42-61).

Regarding claim 13, Nassar discloses all the claimed limitations except for the claimed plurality of sensors being hall sensors. Santos teaches using Hall sensors to produce the digital signals used to determine what position the transmission position encoder is currently in (col2 1-17). Hall sensors are readily available and using them in the device of Nassar would decrease the overall cost of the system and make it easier to construct. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Nassar according to the teachings of Santos to use Hall sensors to determine the position of the transmission position encoder.

Regarding claim 17, the claim is interpreted and rejected as claim 5 stated above. The claimed transmission position encoder wherein said bit pattern is in a mixed state corresponding to the transmission being in park is met by the bit pattern as shown in figure 4 that clearly shows a mixed pattern of bit values when the shifter is positioned in the park position. The phrase "mixed state" is interpreted to mean that some bits of the bit pattern are in a 'high' or logic '1' state and some bits of the bit pattern are in a 'low' or logic '0' state.

Regarding claim 20, Nassar and Santos disclose all of the claimed limitations. The claimed transmission position encoder wherein each state of said bit pattern changes when the transmission is shifted from neutral to drive is met by the bit pattern as shown in figure 4 of Nassar that shows a change in the value of each sensor as the shifter changes from neutral to drive.

Regarding claim 21, Nassar and Santos disclose all the claimed limitations. The claimed transmission position encoder wherein each of said plurality of signals is powered up in a mixed state corresponding to the transmission being in park is met by the bit patter as shown in figure 4 of Nassar that clearly shows a mixed pattern of bit values when the shifter is positioned in the park position. The phrase "mixed state" is interpreted to mean that some bits of the bit pattern are in a 'high' or logic '1' state and some bits of the bit pattern are in a 'low' or logic '0' state.

Regarding claim 22, the claim is interpreted and rejected as claim 8 stated above.

Regarding claim 23, the claim is interpreted and rejected as claim 9 stated above.

5. Claim 16 is again rejected under 35 U.S.C. 103(a) as being unpatentable over Nassar in view of Marshall for the record.

Regarding claim 16, Nassar discloses all the claimed limitations except for the claimed bit map wherein the transmission controller is adapted to track and compare the changes in the bit pattern to a look-up table in the memory of the transmission controller. Marshall teaches a transmission controller (18) that has a memory (80) that stores the position codes of the transmission position encoder and compares those stored codes with the signals of the current position of the transmission position encoder to ensure proper operation of the transmission (col5 6-14 and 22-48). Using a memory would facilitate the job of the transmission controller of Nassar in ensuring the proper operation of the transmission by comparing the actual position sensor data to the expected position sensor data. Examiner takes official notice that the use of a look-up table as a data structure to store data used for comparison is well known to one of ordinary skill in the art. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Nassar according to

the teachings of Marshall to include a memory that utilizes a look-up table to compare the changes in the bit pattern to expected changes.

Response to Arguments

6. Applicant's arguments filed 9 March 2005 have been fully considered but they are not persuasive. The applicant states the following arguments:

A: With respect to independent claim 4, the applicant argues that Nassar does not teach unique binary codes for every bit pattern, including transition patterns.

B: With respect to independent claims 5 and 17, the applicant argues that the prior art does not teach the importance of having all the bits change when shifting from "park" to "reverse".

C: With respect to independent claim 10, the applicant argues that the prior art does not teach the "Park" state being in a "mixed" state.

D: With respect to independent claim 6, the applicant argues that the prior art does not teach all bits changing from "park" to the first forward driving position in order to more quickly alert the system of a problem.

E: With respect to independent claims 4 and 24, the applicant argues that it would not have been obvious to combine the references of Nassar and Dourra because Dourra teaches the use of 5 detectors while Nassar uses 4 detectors.

Responses:

Regarding argument A, the Examiner agrees that Nassar does not specifically teach unique binary codes for every bit pattern including transition patterns. However Dourra teaches using a unique binary code for every bit pattern including transition patterns and therefore Nassar in view of Dourra would meet the claimed limitation of unique binary codes for every bit pattern including transition patterns.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Regarding argument B, Nassar discloses a sensing system which generates combinations of binary codes which require two or more bit changes between any selected operating modes (col2 1-4). The phrase "or more" encompasses the claimed limitation of having each of the plurality of states change as the transmission is shifted from park to reverse. One of ordinary skill in the art would be able to choose any bit pattern for the position and transition states and would be able to choose a bit pattern that operates in this fashion when changing from park to reverse.

Regarding argument C, the claim language of claim 10 does not contain any claimed limitation where the "Park" state must be in a "mixed" state and therefore does not have to be met by the prior art.

Regarding argument D, the claim language of claim 6 does not contain any claimed limitation where all the bits change from "Park" to the "first forward driving position" in order to more quickly detect a problem. The claim states that "wherein each state of said bit pattern changes when the transmission is shifted from neutral to drive."

Regarding argument E, the Examiner stands behind the combination of Nassar and Dourra as proper. Both Nassar and Dourra involve transmission position encoders and were both found in a search of the relevant prior art and are therefore considered analogous art.

Also, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

Dourra clearly teaches using unique binary codes for each of the position and transition states of the transmission and one of ordinary skill in the art would have been able to take that teaching and apply it to Nassar even though they have a different number of position encoders. The number of position encoders of Nassar still provide enough unique binary codes to assign a unique code to each of the transition and position states.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Travis R Hunnings whose telephone number is (571) 272-3118. The examiner can normally be reached on 8:00 am - 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J Wu can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRH

DANIEL WU
SUPERVISORY PATENT EXAMINER
06/02/05